

# Comparisons of Job Characteristics

Focus Occupation: **Materials Scientists (19-2032)**

Associated Occupation: **Geoscientists, Except Hydrologists and Geographers (19-2042)**

[Compare Knowledge](#)

[Compare Skills](#)

[Compare Abilities](#)

[Compare Detailed Work Activities](#)

[Compare Tools and Technologies](#)

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

## Knowledge

Similarity of Focus Occupation to Associated Occupation: 60

Focus Occupation: Materials Scientists (19-2032)

Associated Occupation: Geoscientists, Except Hydrologists and Geographers (19-2042)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation
Engineering and Technology	5.7	17.8	16.2	0 Current knowledge level may be sufficient
Geography	3.9	17.4	5.3	<< Extensive education and/or training may be required
Mathematics	9.2	16.0	15.5	0 Current knowledge level may be sufficient
Computers and Electronics	8.4	15.0	10.0	<< Extensive education and/or training may be required
Physics	4.3	14.4	9.6	<< Extensive education and/or training may be required
Chemistry	4.8	10.3	23.3	>> Current knowledge level is likely more than sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

## Skills

Similarity of Focus Occupation to Associated Occupation: 94

Focus Occupation: Materials Scientists (19-2032)

Associated Occupation: Geoscientists, Except Hydrologists and Geographers (19-2042)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation
Reading Comprehension	10.7	16.0	14.6	0 Current skill level may be sufficient
Science	4.5	15.1	16.8	> Skill level is likely sufficient
Active Listening	11.0	13.6	12.5	0 Current skill level may be sufficient
Complex Problem Solving	9.1	11.9	12.0	0 Current skill level may be sufficient
Mathematics	6.2	9.4	7.7	< A higher skill level may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

Abilities		Similarity of Focus Occupation to Associated Occupation: 97			
Focus Occupation: Materials Scientists (19-2032) Associated Occupation: Geoscientists, Except Hydrologists and Geographers (19-2042)					
Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Written Comprehension	11.0	16.0	14.2	<	Some improvement in abilities may be required
Written Expression	9.8	14.2	13.4	0	Current ability level may be sufficient
Inductive Reasoning	10.2	13.2	14.1	0	Current ability level may be sufficient
Deductive Reasoning	10.6	13.0	13.8	0	Current ability level may be sufficient
Near Vision	11.1	12.8	11.8	0	Current ability level may be sufficient
Category Flexibility	9.0	12.3	11.9	0	Current ability level may be sufficient
Mathematical Reasoning	6.3	10.3	10.3	0	Current ability level may be sufficient
Flexibility of Closure	7.8	10.1	10.6	0	Current ability level may be sufficient
Number Facility	6.3	9.1	8.4	0	Current ability level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common		Similarity of Focus Occupation to Associated Occupation: 95
Focus Occupation: Materials Scientists (19-2032) Associated Occupation: Geoscientists, Except Hydrologists and Geographers (19-2042)		
Work Activities	Exclusivity of Activity	
Adhere to safety procedures	12	
Advise clients or customers	19	
Advise governmental or industrial personnel	28	
Analyze chemical experimental, test, or analysis data or findings	69	
Analyze scientific research data or investigative findings	27	
Classify plants, animals, or other natural phenomena	69	
Collect scientific or technical data	30	
Collect statistical data	47	
Communicate technical information	4	
Conduct laboratory research or experiments	57	
Conduct standardized qualitative laboratory analyses	62	
Conduct standardized quantitative laboratory analyses	62	
Confer with engineering, technical or manufacturing personnel	25	
Confer with research personnel	50	
Confer with scientists	54	

Develop new products based on scientific research results	71
Develop or maintain databases	30
Develop plans for programs or projects	31
Develop policies, procedures, methods, or standards	21
Develop scientific or mathematical hypotheses, theories, or laws	62
Develop tables depicting data	33
Direct and coordinate activities of workers or staff	3
Direct implementation of new procedures, policies, or programs	60
Explain complex mathematical information	30
Forecast or predict phenomena based upon research data	71
Identify properties of rocks or minerals	85
Make decisions	24
Make presentations	13
Perform statistical analysis in physical science or geological research	71
Plan scientific research or investigative studies	48
Prepare reports	8
Prepare technical reports or related documentation	22
Present research papers or dissertations on physical science issues	78
Recommend further study or action based on research data	60
Record test results, test procedures, or inspection data	48
Resolve engineering or science problems	46
Use chemical testing or analysis procedures	54
Use computers to enter, access or retrieve data	3
Use knowledge of investigation techniques	16
Use knowledge of materials testing procedures	70
Use laboratory equipment	60
Use library or online Internet research techniques	21
Use mathematical or statistical methods to identify or analyze problems	30
Use physical science research techniques	68
Use quantitative research methods	35
Use relational database software	26
Use scientific research methodology	21
Use spreadsheet software	18
Use word processing or desktop publishing software	17
Write business project or bid proposals	48
Write research or project grant proposals	33
Write scholarly or technical research papers	36

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

## Tools and Technologies that Both Occupations Have in Common

Similarity of Focus  
Occupation to Associated  
Occupation: 70

**Focus Occupation: Materials Scientists (19-2032)**

**Associated Occupation: Geoscientists, Except Hydrologists and Geographers (19-2042)**

Tools and Technologies	Exclusivity
Computers	1
Content authoring and editing software	1
Crystallography equipment	23
Data management and query software	1
Electrochemical measuring instruments and accessories	9
Forming tools	2
Geophysical and geotechnical instruments	23
Indicating and recording instruments	2
Industry specific software	1
Information exchange software	1
Laboratory boring and grinding and cutting and crushing and pressing equipment	27
Laboratory decanting and distilling and evaporating and extracting equipment and supplies	19
Laboratory electron and solid state physics equipment	29
Laboratory enclosures and accessories	17
Laboratory furnaces and accessories	26
Laboratory mixing and stirring and shaking equipment and supplies	19
Laboratory ovens and accessories	15
Laboratory water purification equipment and supplies	29
Length and thickness and distance measuring instruments	2
Light and wave generating and measuring equipment	4
Network applications software	1
Presterilization cleaning equipment and solutions	24
Rough and finishing tools	5
Sampling equipment	12
Soil measuring equipment	20
Spectroscopic equipment	10
Temperature and heat measuring instruments	6
Viewing and observing instruments and accessories	4
Weight measuring instruments	7

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.